

## Claims

1. A cell handling device including a vessel able to hold, in a liquid-tight state, a handling medium that is fluid and contains  
5 cells, and being able to transfer the handling medium between an interior and an exterior of the vessel via a mouth being opened in the vessel to end the liquid-tight state, the mouth connecting the interior and the exterior, wherein

at least part of the vessel that contacts the handling medium  
10 when the vessel holds the handling medium is a gas permeable region for passing a quantity of gas necessary for survival of the cells.

2. The cell handling device of Claim 1, wherein

a whole of the vessel that contacts the handling medium when  
15 the vessel holds the handling medium is the gas permeable region.

3. The cell handling device of Claim 1 or 2, wherein

in terms of an overall oxygen permeability quantity, a gas permeability of the gas permeable region is one of 1 mL/24 hr atm  
20 or more and 10 mL/24 hr atm or more.

4. The cell handling device of any of Claims 1, 2 and 3, wherein

the gas permeable region is composed of one of a gas permeable resin and a porous film.  
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5. A tissue regeneration method in which the cell handling device of any of Claims 1 to 4 is used, the tissue regeneration method comprising:

a first step of holding, the handling medium in the vessel;  
and

a second step of transplanting the handling medium into a living  
body.

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6. The cell handling device of Claim 1, further including  
a volume varying means for varying a volume of the vessel wherein,  
as the volume varying means varies the volume, the handling  
medium is discharged, or flows into, the vessel.

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7. The cell handling device of Claim 1, wherein  
the vessel is at least partially composed of a main body that  
combines with a plunger to form a syringe type device,

the plunger is slidably insertable into the main body, the  
15 handling medium being transplanted into a living body by a pushing  
force being applied to the plunger, and

at least part of the main body and/or the plunger is the gas  
permeable region.

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8. The cell handling device of Claim 7, wherein  
the main body is composed of a flexible bag-type vessel that  
holds the handling medium and deforms as the plunger slides, and  
a cylindrical exterior part that holds the bag-type vessel, and  
at least part of the bag-type vessel is the gas permeable region.

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9. The cell handling device of Claim 8, wherein  
the bag-type vessel is detachable from the cylindrical exterior  
part, and handling of the handling medium is possible when the bag-type

vessel is in a detached state.

10. The cell handling device of Claim 8 or 9, wherein  
the bag-type vessel includes a discharge part for discharging  
5 the handling medium and a push part that causes a pushing force to  
act on the bag-type vessel.

11. The cell handling device of Claim 10, wherein  
except for the discharge part, a whole of the bag-type vessel  
10 is composed of a flexible material that is contractible under the  
pushing force.

12. The cell handling device of Claim 11, wherein  
the bag-type vessel includes a concertina section, and  
15 the concertina section is shortened via the push part effecting  
the pushing force.

13. The cell handling device of Claim 11, wherein  
the bag-type vessel is a tube.

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14. The cell handling device of Claim 8, wherein  
a gas permeable region is provided in at least one other part  
besides the bag-type vessel so as gas exchange between a handling  
device exterior and the bag-type vessel is possible when the bag  
25 type vessel is being stored in the cylindrical exterior part.

15. The cell handling device of Claim 8, further including  
a rupturing means for rupturing the bag-type vessel when the bag-type

vessel is being stored in the cylindrical exterior part.

16. The cell handling device of Claim 8, wherein

a discharge part that discharges the handling medium in a plunger

5 forward-sliding direction is provided in the main body, and

the discharge part is formed such that a needle, an intravascular catheter or other conduit can be connected thereto.

17. The cell handling device of any of Claims 6, 7, 8, 9, 10,

10 11, 12, 13, 14, 15, and 16, wherein,

in terms of an overall oxygen permeability quantity, a gas permeability of the gas permeable region is one of 1 mL/24 hr atm or more and 10 mL/24 hr atm or more.

15 18. The cell handling device of any of Claims 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16 and 17, wherein,

the gas permeable region is composed of one of a gas permeable resin and a porous film.

20 19. A tissue regeneration method in which the cell handling device of any of Claims 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, and 18 is used, the tissue regeneration method comprising:

a first step of holding the handling medium, in the vessel;

and

25 a second step of transplanting the handling medium into a living body.

20. The cell handling device of Claim 7, wherein

portions of the gas permeable region are provided at a plurality of separate locations in the main body and each portion extends in a sliding direction of the plunger.

5           21. The cell handling device of Claim 20, wherein  
each portion of the gas permeable region is composed of a material whose gas permeability is higher than a gas permeability of a principal material of the main body.

10           22. The cell handling device of Claim 7, wherein  
a portion of gas permeable region is located in the main body in a sliding direction of the plunger.

15           23. The cell handling device of Claim 22, wherein  
a portion of the gas permeable region is formed at a tip of the plunger.

20           24. The cell handling device of Claim 22, wherein  
in the main body, a portion of the gas permeable region is located in proximity to a discharge part that is for discharging the handling medium from the main body.

25           25. The cell handling device of Claim 24, wherein  
the discharge part is formed at or in proximity to a surface that makes contact with the plunger when the plunger is in a fully pressed state, and  
a portion of the permeable region is formed in the surface.

26. The cell handling device of Claim 24, wherein  
a portion of the gas permeable region is provided in a closing  
member that covers the discharge part.

5           27. The cell handling device of any of Claims 20, 21, 22, 23,  
24, 25, and 26, wherein

in terms of an overall oxygen permeability quantity, a gas  
permeability of the gas permeable region is one of 1 mL/24 hr atm  
or more and 10 mL/24 hr atm or more.

10           28. The cell handling device of any of Claims 20, 21, 22, 23,  
24, 25, 26, and 27, wherein

the gas permeable region is composed of one of a gas permeable  
resin and a porous film.

15           29. A tissue regeneration composition including cells, a  
fluidity medium, and granular cell scaffold microcarriers which are  
scaffolds for the cells, wherein

the cell scaffold microcarriers are composed of a bioabsorbable  
20 material and are cell adhesive.

30. The tissue regeneration composition of Claim 29, wherein  
a diameter of the scaffold microcarriers is between 10  $\mu\text{m}$  and  
2000  $\mu\text{m}$  inclusive.

25           31. The tissue regeneration composition of Claim 29 or 30,  
wherein

the scaffold microcarriers are porous.

32. The tissue regeneration composition of any of Claims 29,  
30 and 31, wherein

the scaffold microcarriers have undergone a treatment to  
5 improve a cell adhesiveness thereof.

33. The tissue regeneration composition of any of Claims 29,  
30 31, and 32, wherein

the cells are cells selected from a group of adhesive cells  
10 which require scaffolds in order to proliferate.

34. A tissue regeneration composition-containing cell handling  
device including a vessel able to hold, in a liquid-tight state,  
a tissue regeneration composition that is fluid and contains cells,  
15 and being able to transfer the tissue regeneration composition between  
an interior and an exterior of the vessel via a mouth being opened  
in the vessel to end the liquid-tight state, the mouth connecting  
the interior and the exterior, wherein

the tissue regeneration composition includes i) cells, ii)  
20 a fluidity medium, iii) granular cell scaffold microcarriers that  
are composed of a bioabsorbable material and float in the fluidity  
medium, and

at least part of the vessel that contacts the tissue regeneration  
composition when the vessel holds the tissue regeneration composition  
25 is a gas permeable region for passing a quantity of gas necessary  
for survival of the cells.

35. The tissue regeneration composition-containing cell

handling device of Claim 34, wherein

a whole of the vessel that contacts the tissue regeneration composition when the vessel holds the tissue regeneration composition is the gas permeable region.

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36. The tissue regeneration composition-containing cell handling device of Claim 34, further including a volume varying means for varying a volume of the vessel wherein,

as the volume varying means varies the volume, the tissue  
10 regeneration composition is discharged, or flows into, the vessel.

37. The tissue regeneration composition-containing cell handling device of Claim 34, wherein

the vessel is at least partially composed of a main body that  
15 combines with a plunger to form a syringe type device,

the plunger is slidably insertable into the main body, the tissue regeneration composition being transplanted into a living body by a pushing force being applied to the plunger, and

at least part of the main body and/or the plunger is the gas  
20 permeable region.

38. The tissue regeneration composition-containing cell handling device of Claim 34 or Claim 37, wherein

the cell scaffold microcarriers are more cell adhesive than  
25 both the gas permeable region and the vessel that contacts with the tissue regeneration composition.

39. The tissue regeneration composition-containing cell



handling device of Claim 38, wherein

a discharge part that discharges the tissue regeneration composition in a plunger forward-sliding direction is provided in the main body, and

5 the discharge part is formed such that a needle, an intravascular catheter or other conduit can be connected thereto.

40. The tissue regeneration composition-containing cell handling device of Claim 38, wherein

10 in the main body and/or the plunger, at least parts that contact the tissue regeneration composition are formed from a material that is cell non-adhesive.

41. The tissue regeneration composition-containing cell  
15 handling device of any of Claims 34, 35, 36, 37, 38, 39, and 40, wherein

in terms of an overall oxygen permeability quantity, a gas permeability of the gas permeable region is one of 1 mL/24 hr atm or more and 10 mL/24 hr atm or more.

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42. The tissue regeneration composition-containing cell handling device of any of Claims 34, 35, 36, 37, 38, 39, 40, and 41, wherein

25 the gas permeable region is composed of one of a gas permeable resin and a porous film.

43. The tissue regeneration composition-containing cell handling device of any of Claims 40, 41, and 42, wherein

the cell non-adhesive material is one of a hydrophilic material,  
a hydrophobic material and a material having a negative charge.

44. A tissue regeneration method in which the tissue  
5 regeneration composition-containing cell handling device of any of  
Claims 34, 35, 36, 37, 38, 39, 40, 41, 42, and 43 is used, the tissue  
regeneration method comprising:

a first step of holding the tissue regeneration composition  
in the vessel; and

10 a second step of transplanting the tissue regeneration  
composition into a living body.